ATA-E000 CURRICULUM FRAMEWORK

Programme Code

ATA-E000

Programme Title

Electrical & Electronics Foundation

Programme Status

Version 1.0)

Programme Duration

- **12 Weeks**
- **5 Training Days per Week**
- **8 Contact Hours per Day**
- **60 Training Days**
- **480 Total Contact Hours**

Teaching Philosophy

- **70% Practical (336 Hours)**
- **30% Theory (144 Hours)**

Every learning unit shall demonstrate this balance.

Programme Purpose

ATA-E000 CURRICULUM FRAMEWORK

To produce competent entry-level automotive electrical and electronics technicians who can:

- Work safely.
- Understand electrical and electronic principles.
- Use workshop measuring instruments correctly.
- Read wiring diagrams.
- Diagnose basic electrical faults.
- Service common automotive electrical systems.
- Build the knowledge required for specialist programmes (E100–E600).

Programme Structure (Locked)

Module	Title	Weeks	Hours
Module 1	Workshop Safety, Professional Practice & Electrical Fundamentals	2	80
Module 2	Automotive Electrical Fundamentals	3	120
Module 3	Automotive Electronic Components & Semiconductor Foundations	4	160
Module 4	Wiring Systems, Practical Diagnostics & Final Competency Assessment	3	120
TOTAL		**12 Weeks**	**480 Hours**

Practical / Theory Distribution

Category	Hours
Practical	336
Theory	144
Total	**480**

Module Breakdown

Module 1 (Weeks 1–2)

Workshop Safety, Professional Practice & Electrical Fundamentals

Topics include:

- Workshop safety
- PPE
- Electrical hazards
- Fire safety
- First aid
- Tool identification
- Measurement systems
- Basic electricity
- Voltage
- Current
- Resistance
- Power
- Ohm's Law
- Workshop mathematics
- Professional ethics

Module 2 (Weeks 3–5)

Automotive Electrical Fundamentals

Topics include:

- Batteries
- Charging systems
- Starting systems

- Switches
- Fuses
- Circuit breakers
- Relays
- Solenoids
- Resistors
- Capacitors
- Inductors
- Transformers (automotive applications)
- EMC/EMI
- Wiring diagrams
- Harnesses
- Connector systems

Module 3 (Weeks 6–9)

Automotive Electronic Components & Semiconductor Foundations

Topics include:

- Semiconductor fundamentals
- PN junction
- Standard diodes
- Zener diodes
- Voltage regulation
- LEDs
- Optoelectronics
- BJTs
- MOSFETs
- IGBTs (foundation introduction)
- Introduction to integrated circuits
- Introduction to power electronics
- Introduction to PCB construction

- ESD protection

Scope Note: Advanced PCB repair, oscilloscope waveform interpretation, component-level ECU repair, microcontroller architecture, CAN protocol analysis, and high-voltage EV power electronics are introduced only at awareness level here. Mastery is reserved for ATA-E200 (ECU Repair & Key Programming) and ATA-E600 (Electric Vehicles).

Module 4 (Weeks 10–12)

Wiring Systems, Practical Diagnostics & Final Competency Assessment

Topics include:

- Harness construction
- Wiring repair
- Connector repair
- Voltage drop testing
- Current measurement
- Continuity testing
- Basic scan tool introduction
- Diagnostic strategy
- Customer complaint analysis
- Practical fault finding
- Final integrated workshop project
- Final competency assessment

Practical Standards

Every practical session shall include:

1. Safety briefing.
2. Instructor demonstration.
3. Guided practical.

4. Individual practical assessment.
5. Quality control inspection.
6. Reflection and feedback.
7. Portfolio evidence collection.

Assessment Structure

Assessment Type	Weight
Continuous Practical Assessment	40%
Workshop Competency Demonstrations	30%
Written Assessment	20%
Professional Conduct & Portfolio	10%
Total	**100%**

Competency Standard

A learner shall not progress until they have demonstrated competence in:

- Safe workshop practice.
- Tool usage.
- Measurement techniques.
- Circuit interpretation.
- Basic diagnostics.
- Electrical repair procedures.
- Documentation.
- Professional behaviour.